THE ZOOLOGIST

No. 232.—April, 1896.

BIRD LIFE IN EASTERN ALGERIA.

By O. V. Aplin, F.L.S.

When living for a few weeks, in May and June, 1895, in the western part of Tunis, a little to the south of the Khomair country, on the borders of Algeria, I occasionally crossed the frontier of the latter country; and I propose to give in this paper some account of the birds I used to meet with there. That in casual and infrequent visits of this kind, of merely a few hours' duration each, I should only meet with the most usual and ordinary birds—and should overlook some of these even—goes without saying. And yet many of the species which I did encounter are so interesting to the members of that growing class of British field-ornithologists ("hedgerow naturalists" an old friend calls them) to which I try to belong, that I feel hardly any apology is needed for laying these notes before the readers of 'The Zoologist.'

The valley of the Medjerdáh (the Roman Bagrada) at the point, and above where, the river crosses the frontier, has narrowed very considerably in the last mile or two of its upward course. The traveller proceeding in that direction has left the broad plain-like valley, with its wide, rich corn-lands, and its woods of wild olive, intersected by many a tributary stream or little river. The hills have closed in rapidly, and it is only here and there that one finds a tiny patch of corn at the foot of the hills, or on some little terrace higher up, both probably edged and encroached upon, more or less, by the sarib thorn, or other spiny shrubs, from whose clutches only "gabardine" escapes unscathed. Nor are there in these few miles of Algerian territory which I used to visit more than one or two Arab douars of the smallest dimensions, with scanty prickly-pear gardens; for that part of the valley is sparsely populated in comparison with that lower down. For the most part the hills rise sharply on each bank of the river (some spurs of the Atlas in sight reaching to about 2500 and 3000 ft.), their rocky or stony sides thickly covered with rosemary, gum cistus, cytisus, and thorny shrubs, and in parts with a taller growth of wild olive, batoum (*Pistacia terebinthus ?*), &c. Still higher are some fair grassy pastures, studded in places with a few wild olives, hawthorns, dwarf shrubby batoums, &c.; or covered with the blackened stems of shrubs, victims of a great forest fire which raged for miles on both sides of the valley in the previous year. This higher bare ground is interspersed with stretches still covered with rosemary, cytisus, cistus, &c , and with naked stony or rocky ground. To the highest parts of the hills just here I never climbed. At the foot of the hills the banks of the river in places are overgrown with the lovely pink oleander, tamarisk, wild olive, myrtle, and other shrubs. The oleander and tamarisk grow also on little islands formed in its bed by the river dividing. The river has a rapid fall, and still, glassy lagoons are less frequent than rippling shallows, and tumbling, rushing rapids. The bed of the river is stony and full of boulders, and the stream is sometimes interrupted by lumps of rock; the banks are chiefly rocky, and at this season the water seldom quite touched them, leaving usually a border of water-worn pebbles or some mud.

This is the sort of country in which my walks lay, but I should add that the hill-sides on the south bank (to which I confined my steps) are almost, if not quite, devoid of permanent water, though the heavy thunderstorms which occasionally occur, and send the river down in flood, wear out many a torrent-course in their dry and stony sides. During the course of my stay in the district I paid a short visit to a place at the head of the valley on very high ground, but as the country there (and its birds) presented some difference to that treated of now, I shall refer to it separately in the latter part of this paper.

I cannot refrain from mentioning here a very curious plant, which was quite a feature in the landscape foreground. It is perhaps the bluest plant in the world, at least I cannot imagine a bluer one. It is an angular plant, six inches or a foot high, with short, stiff, narrow leaves in whorls of three, developed into spines. With the exception of the cluster of tiny inconspicuous flowers inside the whorl, the whole plant is of a dark dull sky-blue, perhaps a dark cobalt—a really fine colour, though peculiar. A patch of these plants often colours a bit of the hillside as blue as a patch of bluebells in an English wood.

I saw comparatively few birds of prey. The Lesser Kestrel (*Falco cenchris*) was perhaps the most common species, but I saw also its larger relative *F. tinnunculus*. Egyptian vultures (*Neophron percnopterus*), adults in clear white dress with black wings, were not an uncommon sight. They look very fine soaring in the deep, but brilliant blue sky, their wings held straight out and level, rather like a Shearwater's. Once I remember seeing a great fulvous-brown Griffon Vulture (*Gyps fulvus*). The Black Kite (*Milvus migrans*) I saw, but it likes rather to hunt near the Arab douars, for the Arabs keep a lot of fowls. I have only twice seen our Kite (*M. ictinus*) in these islands, and only once in recent years, so perhaps I am not a fair judge; but it seemed to me that the Black Kite is hardly so grand-looking a bird.

Buzzards I never saw actually in Algeria, though I once saw a pair (*Buteo desertorum ?*) wheeling over the hills just across the frontier.

Among the warblers the most conspicuous was the Rufous Warbler (*Aëdon galactodes*), which was numerous, the dry-bushed hillsides suiting the bird admirably. It is a bold bird, and conspicuous both in manners and colouring. It is easy to watch it in the breeding season, for if you sit down and wait anywhere near the home of a pair, they will come to see what you are about, and keep you under observation. It flits with an easy flight on to some outside or topmost twig, and then on to another, and so on. Its motions are rather curious; the long, broad tail is gently jerked (if one may use such an expression) upwards, and slightly spread (the action is peculiar and very graceful) while the wings are drooped. When on the ground the Rufous Warbler hops like a Nightingale, but puts its tail up, sometimes nearly erect like a Wren's; its body is held in rather an upright position also. You often see it on the ground. To sing, it loves to mount to a fairly high perch, and I have often seen it sitting on a tall prickly-pear. Its song is loud, sweet, and rather twittering, somewhat Robin-like, and delivered in Thrush-like jerks, some of the notes being fairly full and rich. Perhaps one might syllable it "chitty witty chee tree tee wee." When the Rufous Warbler flies it spreads its tail a little, and displays the black and white markings at the tip. Indeed, on all occasions it is fond of making play and show with its large and distinctly marked tail.

Three species of the Leaf Warblers of the genus *Hippolais* were to be seen. *H. icterina* was found in the bushes near the river, and a little way up the hillside. It has a soft low call-note, "ti-op." Its song is flowing, but not good. It might be written "wardy whichy chyo chyo" over and over again; but there are considerable variations of this, and other notes are interspersed; now and then, however, it reminds one of the song of a river warbler. The song of *H. polyglotta*, which was more usually heard at a slightly higher level, is vastly superior; it is varied and occasionally has some fine rich clear notes. Perhaps the bird deserves its name. It sings, like the last-named species, in an exposed position, from the top of a bush, or an outside twig. The song, while it is slightly acrocephaline in character, is delivered in the leisurely manner of a Reed Warbler, but is more flowing, and quite different from that of the latter bird. It is very sweet and a good deal varied. The bird begins its song with a note several times repeated. This varies. It is one of these four:—A soft but clear "whit-way-ee" (a slight emphasis on the middle syllable); a rather harsh Sedge Warbler's note; a sharp bright note; or a sweet and plaintive "wit wee-eee" (the emphasis on the last syllable). Then it goes off into the running song, a varied, rather rapid warble, with some clear, sharp or sweet notes interspersed. The alarm notes are a sharp short "tit," and a harsh rattling "kurrr." *H. pallida* is a very different bird so far as habits go, and has been, perhaps not altogether wrongly, generically separated from the others by some authors. It is far more of a river warbler. It was fairly common on the banks of the Medjerdáh, where these are clothed with thick bushes, for it frequents only the immediate vicinity of water, and haunts especially the thick covert of the tamarisks. It is a skulking bird, and does not sing mounted on an exposed twig; it is continually on the move, and sings from the thickest parts of the bushes, often in those parts which overhang the water. Its song is very inferior, and much more acrocephaline in character than those of its relations before mentioned. It is loud and harsh: "tyuck tyuck tuck tuck char a wichy char wichy char," a few lower-toned, jerky notes are occasionally interspersed. Sometimes "Tac tac tah tarh tarh tac tarh" expresses the song.

I have described the songs of these three species of *Hypolais* rather fully, partly because I am unable to understand the extravagant praise bestowed by some authors (quoted in the 4th edition of 'Yarrell') upon the song of *H. icterina.* Rennie is said to be loud in praise of the rich intonation and multitudinous variety of its notes. More extraordinary still is Hewitson's opinion, that its carol was the sweetest he had ever heard, equalling, if not surpassing, that of the Nightingale. Baron de Selys-Longchamps (I still quote from 'Yarrell') credits it with the power and habit of imitating various other birds. Seebohm, who knew the bird well, gives rather a different account of its singing powers. He writes (Hist. Brit. Birds, vol. i. p. 382), "Its song is by no means specially melodious. It has great power, wonderful variety, and considerable compass, but is singularly deficient in melody." To my mind, the best bit of description he gives relates to the bird when he first made its acquaintance at Valkenswaard, when it "screamed and warbled and chuckled and sang voluminously." I quote a few more of his remarks: "The song is somewhat harsh, but very varied, although he repeats every combination of notes two or three times over in rapid succession, like a Song Thrush." . . . "Perhaps, on the whole, the song of the common Tree Warbler comes nearest to that of the Marsh Warbler, but often it reminds you strongly of the song of the Sedge Warbler. At other times you may trace a fancied resemblance to the chirping of the Sparrow, the scolding of the Whitethroat, or the scream of a Swift; but all rattled off at such a rate one after the other, and repeated so often, that it arrests the attention at once." . . . "in spite of its wonderful variety I think the song is original, and can see no reason for supposing the bird to be more of a mocking-bird than the Song Thrush or Nightingale." Perhaps the examples of *H. icterina* I found spending the breeding season in Africa were less imbued with spirit and energy than those which go further north in spring—it is quite possible. At all events I formed a poor opinion of the song of this species. I look forward to hearing it elsewhere. As I have remarked before, the song of *H. polyglotta* is to my mind vastly superior. There is one more remark of Seebohm's which is worth quoting, *viz.* "If he were a common bird, one might say he screamed, or even shrieked."

The Whitethroat (*Sylvia rufa*) was common, and so was the pretty restless Sardinian Warbler (*S. melanocephala*), which has a running song, whitethroatish, but better than the Whitethroat's song, being rather less harsh and more continuous. One of this bird's alarm notes is sharp, harsh, and loud—"ticket ticket ticket"; another is a kind of "kurrr."

That fine bird, the Orphean Warbler (*S. orphea*) was scarce. It has a loud, bold, Thrush-like song, "yoke-a-toy yoke-a-toy yoke-a-toy" (or toy-tay toy-tay toy-tay)—the three notes are always repeated three times—preceded by some rich warbling notes (not heard at a distance, and less soft and rich than those of the Garden Warbler); then the song goes off into "wich-it-toy wich-it-toy toy-tay toy-tay toy-tay too-tee too-tee too-tee." In mellow richness it approaches the Blackbird's; it is varied altogether, and not always regular, or nearly so. When I first heard it I was reminded, more than of anything else, of the sweet lively song of the Ochre-headed Greenlet (*Cycorhis ochrocephala*), which I used to hear in the riverside "montes" of Uruguay. The alarm-note of the Orphean Warbler is a harsh "chadzz."

Nightingales (*Daulias luscinia*) were in numbers, and in very fine rich song in May and early June. You could hear them pouring out their songs under the blaze of a mid-day African sun.

The Wren (*Troglodytes parvulus*) was not uncommon on the bushed hillsides; and the Blackbird (*Turdus merula*) fairly common.

Once or twice I caught sight of a Golden Oriole (*Oriolus galbula*), or heard its loud, clear, rapid "tlit-a-wee" or "tlit-a-vee-o."

The Dusky Bulbul (*Pycnonotus barbatus*) also I met with, but only very rarely. It has a fine lively and rich song of a few notes only, "tit wot wot tit tit."

That curious, strikingly coloured little bird, neither quite Redstart nor quite Bushchat, called Moussier's Redstart (*Ruti-*

cilla moussieri), was not very uncommon on the bushed hillsides, where it perches on a twig or a rock indiscriminately. Its alarm-notes are curious—a clear "zip zip zip" or "zeep," and a low grating "p'zir" or "pzare."

I did not identify a Wheatear, but probably both *Saxicola stapazina* and *S. aurita* occur; one or the other I saw.

The only Titmouse was the dark blue representative of our Blue Tit (*Parus ultramarinus*), which is not uncommon, and rather fond of prickly-pear gardens.

The Woodchat (*Lanius rufus*) was rather common, and of course very conspicuous, whether perched on a bush or in flight, when it looks as much pied as a Magpie. It is less Shrike-like in general mien than other species of the genus with which I am acquainted, and sits in rather a dumpy position, its stout thick form contributing to this appearance. When a pair of Woodchats are sitting on a bush together in the breeding season, the male does a good deal of courting, frequently bowing to the female. The chestnut of the female's head is usually of a much lighter tint than that of the male. The latter sings regularly; he has a really proper song—a rather quick chatter, harsh certainly, but with three variations, and tolerably continuously delivered, though it comes out in jerks. The Woodchat sings a good deal as it sits on a bush close to the female, bowing repeatedly to her at intervals. Besides its song, the Woodchat has some other notes, *e.g.* "hek hek hek," and "tchay tchay tchay."

Neither the Calandra nor the Short-toed Lark—birds of the plains chiefly—seem to come so far up the valley, but the Crested Lark is found in small numbers at the foot of and a little way up the hills. It is not the ordinary form of *Alauda cristata*, but a darker form, referred by Mr. Whitaker to *A. cristata thecklæ*, Sharpe ('Ibis,' 1895, p. 99). The song of the Crested Lark is not continuous when the bird is circling round in the air. The bird sings chiefly hanging in the air with beating wings, and almost without changing its place; then it moves a bit and sings again. The song is lower and more leisurely than the Sky Lark's; the individual notes are perhaps on the whole better, being more mellow, but the song is less varied. This Lark will also sing when perched on a bush or a stone. Invariably after alighting (it perches on a bush quite as often as on the ground) it utters its call-note (it is also sometimes uttered by the bird as it flies), which is a peculiarly sweet "kay see sweet weet" or "sweet-a-weet." The Crested Lark also has a low croaking note—"quirk" —uttered when it is frequently alarmed.

The Swallow (*Hirundo rustica*) was fairly common.

I think the most abundant bird in the valley was the Goldfinch (*Carduelis elegans*); even in the height of the breeding season, dozens could be seen together, feeding among the great beds of thistles, or washing in the shallow water, and often presenting a sight to delight the heart of a naturalist. These African birds are rather small and dark, yet brilliant; the yellow is very bright, the black intense, and the red a fine deep crimson; they are unlike our small dusky resident race, on the one hand, and the large light-coloured birds which visit us for the breeding season, on the other.

The Serin (*Serinus hortulanus*) I do not remember actually seeing in this part of the valley, but it is doubtless to be found, in small numbers only, as it prefers taller shrubs or trees.

The Linnet (*Linota cannabina*) I used to see on the hillsides, and the Greenfinch (*Ligurinus aurantiiventris*), a brighter bird than ours, with a similar song, in the olive thickets. There, too, and by the river, the handsome Algerian Chaffinch (*Fringilla spodiogena*) was found commonly. Its alarm-note is "twick," not "twink," like that of our bird, *i.e.* not so metallic or ringing; the "whit," too, is a little different; the ordinary note is slightly harsh and Sparrow-like. Its song, perhaps, is "cheese cheese cheese chiderideredee," differing from that of our bird in the first part. But as it is well known that the song of *F. cœlebs* varies a little in different localities, perhaps not much importance attaches to this modification.

There being little corn, and few douars, the Spanish Sparrow (*Passer hispaniolensis*) was not often seen, though I know this bird will take up its abode in a wood if there are big batoum trees, with holes, in it, not too distant from the corn-patches.

The Rock Sparrow (*Petronia stulta*) also I very seldom saw, for there did not happen to be a rocky precipice, such as this bird loves to haunt in the breeding season, within the limits of my walks. The Rock Sparrow's call-note somewhat resembles that of the Greenfinch, but is more squeaky.

Next to the Goldfinch, the Corn Bunting (*Emberiza miliaria*) was the most numerous bird in the district.

Swifts (*Cypselus apus*) were often to be seen high in the air, or over the river, and once I watched some Alpine Swifts (*C. melba*) flying quite low down. Few things in bird-life are grander than the marvellous, dashing, rushing flight of this great Swift, and one is lost in wonder at the sudden way in which it can check its flight, turn to one side, or up or down, and change its direction; one moment it seems to be dashing in the face of the observer, who hears the sharp sound of cut air, and the next, before he can turn, the Swift is gliding smoothly over the river far away.

I sometimes saw a Roller (*Coracias garrula*) perched on the telegraph wire by the railway, or twisting about like a Lapwing, or executing some other strange tumble in the air, to the tune of harsh croaking cries; I think they bred in some of the high earth-banks in the neighbourhood.

More numerous were the lovely Bee-eaters (*Merops apiaster*), the "Chasseurs d'Afrique" of the French, the flash of whose plumage in the sun is something to be seen. They breed in the gorges. I can always recall one scene in which the Bee-eater figures. I was sitting on a rock in a very pretty spot at a slight bend in the river, with tamarisks, pink oleanders, &c., growing among the boulders; the banks above were well shrubbed. Just above where I sat a broad glassy pool was dotted with two or three projecting rocks; beyond this were green and shrubbed slopes, and then a double-headed mountain. Below, the river broke in two, and fell through a rocky and boulder-strewn bed, making noisy rapids. A Kingfisher (rare) sped by, and two Bee-eaters were hawking for insects over the pool and dipping in the water, returning after each graceful flight to perch on some bushes on the bank. The Bee-eater's call-note is "whrip" or "whrrrep" (two or three syllables run together). The alarm-note is a louder, clearer "hrrip." The bird has a sailing flight with outstretched wings. It sits in a somewhat upright position, head, body, and tail all in line. It often perches thus, to dash out at intervals for an insect, and return to the same perch.

The Hoopoe's (*Upupa epops*) "hoop hoop hoop," "hoop hoop," sounded sometimes from high up the slopes; when this bird alights after a flight, and is a little alarmed, it erects its crest and bows; in flight it is a most conspicuously pied bird. It is the "Tebib" of the Arabs, and has (or its skin has) supposed virtues of a medicinal or magical kind; it is much the same with these people.

Rock Doves (*Columba livia*) might be seen flying overhead sometimes, but I did not notice any breeding haunt in that bit of Algeria. The Turtle Dove (*Turtur communis*) was quite common, and occasionally I used to come across a Barbary Partridge (*Caccabis petrosa*). The ordinary call-note of this bird has a considerable resemblance to that of our Red-legged Partridge, as might be expected, and may be expressed as "chuck chuck chukor." The alarm-note when the bird is flushed is "chuckow," the emphasis being laid on the last syllable, which is drawn out; an old cock, when alarmed, makes a great noise. The former note more properly is that of winter. In the breeding season, as is the case with *Caccabis rufa* also, it is modified, and becomes "tucka tucka shack shack." But *Caccabis petrosa* has, in addition, at this season, an extraordinary long-drawn note, which, after listening to it for some time, I put down in my note-book as "h'kwaia"; this strange sound sometimes precedes the ordinary call. The Barbary Partridge is truly a most beautiful bird, its pretty colours being set off by a coral-red beak and orange eyelids.

On May 25th I went (in search of a little bracing air) for a couple of days to Souk Ahras, about two hours by rail (or 60 kilometres) from the frontier, and at the head of the valley. The valley, along which the railway winds with some wonderfully sharp curves, is very lovely. At that date the oleanders were in their glory, and many of the olives, &c., were festooned with trailing white roses; conspicuous among many showy flowers was a tall pink valerian. Some of the mountains beneath which we passed were of considerable height, with oak-scrub at the top —a sure sign here of high elevation. I saw a Roller and a buff-backed Wheatear, either *Saxicola stapazina* or *S. aurita*. We rose throughout the journey, and after Oued Mougras the valley had become much shallower, and rather wider in proportion; here were some corn-patches, the barley nearly ripe; but the ground was always bushy close to the river. At Sidi Bader the little station-house was thickly clustered with the nests of the House

Martin (*Chelidon urbica*), a bird with a strong affection for Europeans, and their stone houses and eaved roofs. The country about there is very European in appearance. We saw corn-fields, and red-tiled station-houses, with gardens full of our flowers and vegetables, and a few vines perhaps; the usual grove of eucalyptus trees having nothing of Africa about it, at all events. The cows, as usual, were just like coarsely-bred Jerseys. But suddenly you see some white-burnoused Arabs, or bare-legged brown children, the girls in the universal blue cotton, and the boys in ragged dirty-white, and red *chachias;* a string of camels, or a white-domed marabout's tomb rising up among the corn, and the illusion vanishes. After Tarja the line rises more rapidly. Many of the little hills (the soil of which is very red) are clothed with vineyards, and there are extensive European gardens. We passed among little wooded hills with some Aleppo pines (*Pinus halepensis*), through several short tunnels, and then left the main valley, and in a few minutes arrived at Souk Ahras, a thoroughly French town, where much and good wine is made, the soil and climate being suitable.

Souk Ahras is 2067 ft. above the sea. The air felt delightfully fresh, and the climate is said to be temperate and very healthy. From the distinctly European appearance, and peaceful aspect of this agricultural neighbourhood, one found it difficult to realise that only five and twenty years earlier the Arabs here rose in revolt, and, after burning the farms and killing the colonists, attacked the town. But a shocking massacre occurred at no great distance ten years later. It is curious to notice how some towns are given up to a particular species of Swallow or Swift. This place (said to be the birth-place of St. Augustine) is in the possession of the House Martin. The Hôtel de Ville (which I took at first for a church, from the fact that a wedding party were just emerging from it) held a great many nests, stuck in clusters at the corners of the little pilasters, under the eaves, and in the corners of the windows. There were swarms of the birds in the air about the building. The next morning, from observations made from my bedroom window, I found that the ruling Sparrow was *Passer domesticus*, with grey crown and typical chestnut back. Either it has ousted *P. hispaniolensis*—the common Sparrow of the country—or the latter never took possession of this new and strange kind of town. *P. domesticus* was perhaps introduced by the French, and perhaps introduction is partly responsible for the plague of Sparrows in Algeria and Tunis, about which I read in 'La Dépêche Tunisienne.'* Whatever he is at home, the House Sparrow has certainly proved to be a curse wherever he has been taken abroad.

The next morning I walked down a small winding valley, and reached the Medjerdáh, there merely a mountain stream, and a very pretty one. The smaller valley was vine-clad at first, and then bushed with the usual shrubs, a cytisus and the broom being still in bloom; the considerable elevation of the country was further shown by the presence of scrub-oak, an ash and an elm, both small, and low Aleppo pines in plenty. Some vines had got astray, and festooned the small trees by the stream and river, showing what a beautiful plant it may be when it escapes from the formality of the vineyard. Nightingales were abundant, and still in full song; a pair were hopping and pecking about on a bit of bare mud at the edge of the river, their tails up like a Robin's. The Cuckoo (*Cuculus canorus*) and the Hoopoe were both calling. The Cuckoo evidently breeds here, and I was pleased to hear its note among the many less familiar songs, for I knew I should be too late to hear it in England, where they were enjoying an early season and a real summer. Serins, and the very abundant Goldfinches, were singing. The Serin often sings on the wing. The song is a rapid sibilant trill. Besides the ordinary call-note, the Serin has another, *viz.* "chitty titty weee," the last note ascending at the end. The Corn Bunting was very numerous. Woodchats were common, as were Linnets, Greenfinches (*Ligurinus aurantiiventris*), Sardinian Warblers, Whitethroats, Blackbirds, Ultramarine Titmice, Rufous Warblers, Algerian Chaffinches, Swallows, and Martins. Both *Hypolais*

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* I am perhaps wrong in assuming that *Passer domesticus* was introduced by man. 'Yarrell' (4th edit.) says, "It is common, though not universally distributed, in Algeria." Loche, in his 'Catalogue des Mammifères et des Oiseaux observés en Algérie,' published in 1858, gives its habitat as "les trois provinces de l'Algérie." Seebohm says that *P. hispaniolensis* is found in Spain, Algeria, Nubia, and Egypt, together with *P. domesticus*, the latter being chiefly confined to the towns. Yet I cannot help thinking there are some facts to be observed about the distribution of the House Sparrow which point to its probable absence from the country before its settlement by Europeans.

polyglotta and *H. pallida* were in song, the latter, of course, only down by the river; and I noticed the Wren, a Kingfisher, Spotted Flycatchers, and the Blackcap (*Sylvia atricapilla*), a bird I never saw lower down the Medjerdáh valley. Near the town I had seen House Sparrows as well as Spanish Sparrows, the latter being the more numerous in the gardens of the scattered outlying houses. Some of these gardens were just then very gay with scarlet or vermilion pomegranate flowers. I heard one or two Cirl Buntings (*Emberiza cirlus*) singing, and watched a fine old male at close quarters while it perched on a low Aleppo pine; it was a very brightly-coloured specimen, and quite a striking bird. In a few minutes the female settled beside him.

May 27th broke with some regular Welsh weather—thin drifting rain and a chilly air (a great change to me just then), but this gave way to fine weather, with a strong cold wind, about 8 a.m. I walked by a good road up to the higher ground above the town, winding among vineyards at first, and then through wide open pasture and corn-fields. It was a lovely country, with green flowery pastures, corn, and vineyards, red-roofed farmhouses, and fruit-trees. Beyond were bushed hills, and other higher, barer ones, green or varied with grey rock, and bushed in places. The air was most invigorating, and the place must be exceedingly healthy. Quails (*Coturnix communis*) were calling from the corn and grass. Goldfinches were flocked, and I saw as many as thirty in a "charm." Sky Larks (*Alauda arvensis*)—another bird not found lower down the valley—were singing, and Crested Larks also; and I noticed some Tawny Pipits (*Anthus campestris*) among the vines. The Tawny Pipit seems to me a quieter, more sedate, and silent bird than any other species of the genus *Anthus* with which I am acquainted. I saw no birds of particular interest on my return journey down the valley.

THE EVOLUTION OF BIRD-SONG.

By Charles A. Witchell.

In July and August, 1890, I published in 'The Zoologist' two articles on the Evolution of Bird-Song. They were the result of a considerable amount of patient observation; and, although they contained many surmises of a more or less valueless character, they also included many statements founded on fact and embodying hitherto unknown (or misstated) records of the construction of songs, and of racial similarities of voice. I should like to defend these articles from hasty criticism. Mr. Warde Fowler, in his 'Summer Studies on Birds and Books,' in the course of two pages (55–57), adverts (seemingly in some haste) "to a theory, lately propounded in 'The Zoologist,' which would explain all songs as imitations, either of the utterances of other birds, or of inarticulate sounds which are constantly obtruded on the bird's ear. The writer of these articles has made a most painstaking analysis of many of the best-known songs; his perseverance is admirable," &c. Then why not do him the justice to quote him without misleading error? What I wrote was that "the call-note, being more or less the result of imitation, would be influenced by other sounds familiar to the bird;" and that is a perfectly justifiable surmise, supported by the observations of Daines Barrington and other authors. I further described how several species construct songs by uttering their call-notes many times in succession (and how many birds repeat certain notes many times in succession) in their songs. I believe I was the first writer to call attention to this fact. Mr. Fowler writes of the songs of Buntings (*op. cit.* p. 157):—"They consist of a quick succession of notes, varying slightly in tone and pitch with different species, and possibly developed from a primitive sound indicating invitation or alarm." Exactly: it was to this theme that I called attention in 'The Zoologist' (1890, pp. 238–9) in the article on "Bird-Song and its Scientific Value," which Mr. Fowler read with so much interest and appreciation!

He further "quotes" as follows:—"He suggests, for example, that the Song Thrush began by imitating the sound made when a snail-shell is being broken against a stone; from this humble beginning, used perhaps as an invitation to others to come and feast on snails, it has gradually developed its splendid song."

I wrote, however, as follows:—"In the course of time persistent sounds might, in consequence of the involuntary or voluntary imitativeness of a bird, modify its call-note. . . . . It is also possible that certain call-notes may have been intentionally modified to a resemblance of the sounds made in obtaining food, and for the purpose of suggesting those sounds to other birds." I then instanced the behaviour of the barn-door cock—which bird, when calling his hen, pretends to be picking food—as "warranting the suggestion" (this was obviously a mere surmise); "but often there is certainly, from whatever cause arising, great similarity between the call-notes of birds and the sounds which are occasioned by their obtaining food or eating it." Among other instances I mentioned, ". . . the Blackbird and Thrush, which at times make a clicking sound that is the foundation of the reiterated alarm-notes of the former bird. This is an imitation of" (I should have written "is similar to") "the 'clicking' sound produced when a snail is broken against a stone." Let me here add that unless a person has cracked a snail within an inch or two of his ear he is not able to form an idea of the loudness of the sounds which a bird hears when it performs the same operation. I did not state that the Thrush developed its song from this cry, but alluded to it as the third best British mimic with which I was acquainted (Zool. 1890, p. 242).

Mr. Fowler proceeds:—"The Swallow's note resembles the sound made by the breaking of the wing-cases of beetles." I wrote:—"The Swallow's call-note 'clit' reminds one of the breaking of the wing-case of a small beetle." The word "note" by itself might be interpreted "song," in which case the expression would be obviously inaccurate.

Mr. Fowler continues the sentence: "the harsh tones of the Rails suggest the crushing of the tender shells on which they partly subsist." This is the only phrase, so far, quoted without error of meaning. He then humorously misquotes me by remarking that the Corncrake "took a fancy to imitate the noise made by a cow in browsing." Should any reader consider this funny, I trust he will defer his conclusion until on some still night he has been near a cow which is browsing rank grass. Then, and then only, will he be able to judge whether my comparison was a fair one:—"The 'crake' of the Landrail is in time and tone closely like the noise made by the grazing of a cow."

I never stated that the Corncrake had any desire to imitate the sound; I merely mentioned the similarity of the two sounds as noteworthy.

Mr. Fowler again misquotes me when writing:—"The Starling's 'whining' sounds are like the noise made when a bird pulls a large worm out of the ground." What I wrote was this:—"In the song of the Starling are some 'whirring' sounds (generally uttered near the beginning of a phrase) which resemble the noise made in pulling a large worm from his hole." There is some distinction between "whining" and "whirring," as applied to a bird's song; but I am now glad to hear from Mr. Fowler that the misspelling was due to a printer's error. Mr. Fowler does not say whether he tried to bring his ear near enough to the struggling worm to hear what noise it actually produces.

He continues:—"The Robin's song is like the gurgling of water, says Mr. Witchell." This is not quite accurate. I wrote:—"The song of the Redbreast seems to be, in its general character, an imitation of the gurgling of water: in summer the bird is very often near water." The latter clause is quoted in inverted commas thus:—"The Robin is frequently found near water." The music of the Robin is describable as a sort of trickling music, in general character not unlike the sweetest murmurs of a small stream.

He thus sums up:—"Surely it is hopeless to try to discover the ultimate origin of individual songs. It is little or no good to publish mere guesses which cannot possibly recommend themselves to the judgment of cautious inquirers." Yet he himself revels in the mimicry which he has observed, though that indicates, if anything can, the origin of the songs of individual birds. He adds:—"It would be more possible, and on the whole more useful, to examine a single group of closely-allied songs, with the object of finding in them some common ancestral element—an archetypal song, the character of which has survived throughout the genus, while particular species have been gradually modifying it. As song is without doubt a valuable specific character, it might surely be worth while to trace its relation, as well as that of plumage and structure, to the generic characters of the whole group. Take, for example, the songs of the Buntings," &c.

Now it appears to me that Mr. Fowler might here have mentioned my articles, knowing that I was the first person who had written on this theme; that I had traced "family-voices" in the *Corvidæ*, Thrushes, Warblers, Doves, and other rasorial birds. Yet he has made no allusion to it, but has expressed his suggestion as though it had been original.

Since the above was written I have heard from Mr. Fowler that he did not think he had ever before seen my second paper on "The Evolution of Bird-Song" ('Zoologist,' August, 1890); and he kindly offers to expunge the above criticism from his book, but I have expressed the hope that if his opinions are unchanged he will allow it to remain.

ON A WILD LIVING MOUSE OF THE *MUS MUSCULUS* GROUP IN PORTUGAL.

By Oldfield Thomas, F.Z.S.

In England and other parts of Northern and Western Europe the House Mouse, *Mus musculus*, is the only member of its group as yet known to occur, and, as we are all aware, this lives solely in or near the haunts of man, while there is no genuine wild species corresponding to it, and it cannot therefore properly be considered a member of the really indigenous fauna. But in many parts of Asia, in Arabia, and in N. Africa, there are found mice belonging to the same group, but living independently of man, and evidently truly indigenous animals. These, notably in N. Africa, are commonly much paler than our House Mouse, and have white or whitish bellies, while in our familiar pest this part is very constantly of a dull smoky colour.

While trapping small mammals in Portugal, I have found two forms of the group inhabiting the country: one our typical northern animal, smoky-bellied and house-haunting; and a second, found away in woods and open gardens, which appears to be the Portuguese representative of the N. African white-bellied mice, and to be quite distinct from the introduced and domesticated form.

This second animal is distinguished from the other by its whitish or pale buff belly, well defined from the darker colour of the upper parts, by its whitish feet, and also by its much shorter tail.

This latter character the following measurements will show:—

TYPICAL *Mus musculus*.

Head and body	84	81	74 mm.
Tail . . .	82	81	73 mm.

WILD FORM.

Head and body	77	77	77	76	78 mm.
Tail . . .	65	61	62	62	57 mm.

Nearly a score of the wild form have been trapped, and of these not one has shown the slightest tendency towards intergradation with the true *Mus musculus*, while their constancy in colour and proportions has been very noticeable. In fact, no one who had seen them in the flesh could doubt their essential distinctness from that animal.

This being the case, it is evident that in the Wild Mouse we have to do with a genuine indigenous species, occurring side by side, but not mixing with the introduced form. It is therefore a new addition to the fauna of Portugal, and its non-recognition hitherto has been, of course, due to its resemblance and close relationship to the introduced *Mus musculus*. Like the Mungoose and the Genet, it forms part of the N. African element in the Portuguese fauna, but whether, like the last-named, it penetrates into S. France, or like the former is confined to the Peninsula, still remains to be determined. Visitors to Pau, Biarritz and other southern places might occupy themselves pleasantly and advantageously by measuring and skinning any mice that could be trapped there in order to clear up this interesting point.

What the name of this wild form should be must unfortunately remain doubtful for the present. Several such mice have been described from N. Africa, among others *Mus spretus*, Lataste, and *M. algirus*, Loche; while further east similar forms have been called *Mus bactrianus*, Blyth, and the exact relationships of all these to each other and to the Portuguese animal must be better understood than at present before the proper names for them can be settled. Another mouse of the same group is that discovered on the Salvage Islands by Messrs. Grant and Baring, to which also I have not as yet ventured to assign any definite name.

All these forms of the *Mus musculus* group will, it is true, be probably only looked upon as geographical subspecies of the parent form; but that does not make it less interesting to find out exactly their distribution and relationships to each other.

At both the two places in Portugal where I have trapped (Cintra and Estoril) I have succeeded in obtaining both forms, and at each place the white-bellied one was found only in the woods and gardens, where it competes with the ubiquitous *Mus sylvaticus*, abundant, as usual, everywhere. Like its domesticated relative, it is rather more cautious than other wild mice, and one seldom catches a second specimen on the same spot whence a first has been obtained, which is far from being the case with *Mus sylvaticus*.

Inhabiting the same places as *Mus sylvaticus*, it is difficult to determine whether it makes burrows for itself or only trespasses in the runs of that animal; but on the whole I am inclined to believe the latter is the case, and that in the absence of suitable ready-made burrows it takes refuge in runs among logs and stones, or in holes under the roots of trees.

THE FAUNA OF THE OUTER HEBRIDES.

By Radclyffe Walters.

It has occurred to me that a few notes on the birds and beasts which chiefly interest the sportsman, as observed during six years' tenancy of a shooting in Lewis, may to some extent supplement the observations recorded in Messrs. Harvie-Brown and Buckley's 'Fauna of the Outer Hebrides.'

The Galson shootings, being situated at the extreme north of the island, must often be the first resting-place of birds on their southward migration, and though a skilled naturalist with the same opportunities would no doubt have ascertained many interesting facts which escaped my notice, I offer my notes as being at all events, as far as they go, the result of actual observation.

I propose to take 'The Fauna of the Outer Hebrides' as my text-book, and only to record such observations as are at variance with, or supplementary to, its statements. The references are in all cases to the pages of that book.

Common Hare (p. 38).—I only saw this three times, once in 1890, and twice in 1895; possibly the same Hare was seen twice in 1895, as the first was not shot, and the second was killed only two or three days afterwards within a mile or two of the same place. They are said to have been much more common before the Ground Game Act, as they frequented the cultivated ground, where they could be easily killed by the crofters.

Blue Hare (p. 39).—Much more abundant in 1895 than in any previous year; forty-four were killed, exactly double the average of the five previous years. The increase was noticed in the early spring, and was attributed to their having been driven down by the severe winter from the higher hills in the south of the island.

Rabbit (p. 39).—Found all over the moor, and abundant in suitable places on the coast. Many are of various colours, particularly black and white, owing, it is said, to a previous tenant of the sheep-farm having turned down some tame ones.

Chough (p. 69).—A specimen of this bird was shot in Stornoway Harbour on September 13th, 1895, by Mr. D. Mackenzie, who is frequently quoted by Messrs. Harvie-Brown and Buckley; in the previous autumn he saw a bird which he believes to have been a Chough.

Hooded Crow (p. 70).—The keeper's experience agrees with Messrs. Harvie-Brown and Buckley's suggestion that the Hooded Crow finds enough food on the sea-shore without interfering to any great extent with the nests of other birds; it does not often go far from the coast.

Rook (p. 71).—Mr. Mackenzie tells me that an extraordinary flight of Rooks, probably 5000 or 6000, visited Lewis about October, 1893, as noted by him in 'The Field' at the time. About 300 remained during the next summer, but did not breed; in 1895 they nested for the first time (no doubt in the Castle grounds at Stornoway), and are now building again.

Raven (p. 71).—Nests regularly in the cliffs on the north-east coast. The keepers of Galson and Gress make a combined raid upon their nests every spring. Undoubtedly visits us in large numbers from the mainland. Very destructive in nesting season of 1893. On arriving at Galson early in September, 1894, I found that the keeper had a row of about twenty, recently killed, laid out for my inspection.

Snowy Owl (p. 77).—One was shot by our party on August 25th, 1890. In 1893 several appeared during the nesting season, and were very destructive, taking the hen Grouse at the water-side when they left their nests for their evening drink. The bright hot weather caused them to hide themselves in the day-time, instead of being, as they are in dull weather, very conspicuous objects on the hill-side; but the keeper killed several, certainly four or five, and I think Mr. Mackenzie has two of them stuffed.

Peregrine Falcon (p. 88).—Nests are taken in most years by the keepers on the cliffs on the north-east coast.

Gannet (p. 94).—Invariably seen travelling, singly or in small companies, along the coast, which runs about south-west and north-east, in a north-easterly direction. At all hours of the day, from 9 or 10 a.m. till late in the afternoon, I have seen this movement, and conclude that, as they are said to frequent Rona, which lies about forty miles to the north-west of the Butt, they go out to sea in a south-westerly direction in the morning, and strike the coast on the return journey.

Bean Goose (p. 99).—I remember identifying a bird of this species, shot by our party, but not knowing of the uncertainty as regards its occurrence, I made no note of particulars.

White-fronted Goose (p. 99).—Often seen, and one or two shot, but not so common as the Greylag. I should say regular in its occurrence.

Mallard (p. 102).—Certainly common in autumn, but, with all the other wildfowl, very uncertain in its appearance in winter, and driven away by very hard or very stormy weather.

Teal (p. 103).—Common, and more frequently shot than any other wildfowl; the game-book shows a total for the six seasons of 342 wildfowl, of which 174 were Teal. I have no doubt as to their breeding there, but, not knowing that there was any question about it, did not collect any evidence on this point.

Pintail (p. 104).—I shot one out of a flock of four on October 1st, 1894.

Scaup (pp. 105 and 249).—One, out of four, was shot on October 18th, 1895. Never seen before by the keeper, who has been twenty-seven years on the place.

Golden Eye (p. 106).—A few generally seen in the late autumn. One killed on October 22nd, 1892; two on October 6th, 1893; these had evidently only just arrived, and were so tired that we had to fire at them to drive them, off a loch on which they were just out of shot, over a gun lying up for them. One drake, in very good plumage, killed on October 21st, 1893.

Goosander (pp. 110 and 249).—A young male, just assuming full plumage, shot on October 26th, 1895, while fishing in a burn, and with four or five small trout in its gullet. This was at the end of a week of very bad weather; northerly winds, with rain, hail, and snow every day. Apparently the first specimen actually obtained in the Outer Hebrides. The bird has been preserved.

Sand Grouse (pp. 114 and 254).—Two or three of the flock mentioned on p. 254 were shot by the keeper; one, set up by him, is now in the lodge.

Grouse (p. 118).—Young broods, too small to shoot, occasionally found in October; I have a note of this happening on September 27th, 1895. I once found a covey dusting themselves in the road near the lodge after 7 p.m. on September 29th.

Coot (pp. 123 and 253).—Only frequents one loch.

Lapwing (p. 125).—Only found in the immediate neighbourhood of the same loch.

Ruff (pp. 134 and 254).—One shot on September 6th, 1892; a Reeve on September 6th, 1893, and another Reeve on September 8th, 1894. These dates seem to point to a great regularity in the autumn migration. As far as I know, the birds were alone in each instance; probably but few select a route so far to the westward.

Owls.—I have notes of a "Barn Owl" having been killed on August 29th, 1891, and a "Brown Owl" on September 2nd, 1893; but I did not see them, and do not know their species.

If I may venture on a criticism on the excellent work which I have taken as my text-book, I should like to ask why it is adorned with a frontispiece depicting animals which are unknown in the Outer Hebrides, such as the Fox, the Badger, and the Wild Cat?

NOTES AND QUERIES.

MAMMALIA.

Mus rattus at Great Yarmouth.—Mr. A. Patterson has sent me several typical specimens of *Mus rattus* from Great Yarmouth, where he informs me they have suddenly become very abundant. They appear to be restricted to a portion only of the town, but show an inclination to increase their radius. Mr. Patterson is of opinion that this species has never been absent from Yarmouth within his recollection, but if so, it appears strange that it should only recently have attracted attention; it seems more likely that it is a recent importation by grain ships, and that having fallen into suitable quarters, it has increased in numbers very rapidly, as is the manner of all the members of the genus; this seems the more probable from the circumstance that the last example sent me was not *Mus rattus*, but the closely-allied race *Mus alexandrinus*. Mr. Patterson has also sent specimens to Mr. Eagle-Clarke and Mr. Barrett-Hamilton.—T. SOUTHWELL (Norwich).

CETACEA.

Dolphin in the Thames at Chiswick.—I have been viewing a Dolphin which was taken in the Thames here on April 10th. It is a female, measuring over eleven feet from the snout over the back to the tail. The back is black, shaded off on the lower parts of the animal to white. Its captors called the creature a Porpoise, but the shape of the jaws, which form a snout, prove it to be a Dolphin, probably *Delphinus delphis.*—ALFRED SICH (Burlington Lane, Chiswick).

[The Porpoise has the head rounded, with no distinct beak. In the Dolphin the beak is as long as the brain-case or longer. The Porpoise has only from twenty to twenty-six teeth in each jaw, while the Dolphin has double that number. As regards dimensions, an adult Porpoise generally measures from four to five feet in length, an adult Dolphin about a couple of feet longer. Eleven feet, as above mentioned, seems to us an extraordinary length. Perhaps it is the Bottle-nosed Dolphin, *Delphinus tursio.* —ED.]

BIRDS.

Snow Buntings at the Mouth of the Thames.—On March 14th I saw four Snow Buntings (*Plectrophanes nivalis*) on the cliff between Southend and Shoeburyness. Is not this late for these birds to remain here, particularly after so mild a winter? I was walking with a young Canadian, who is undergoing a course of instruction in gunnery at Shoeburyness, and on my asking him if he recognised the bird, he replied that it appeared to resemble their "snow bird." I have several times this winter been "flighting" on the east end of Canvey Island, and there, on and about the broken bank and on the grassy foreshore, I have invariably met with Snow Buntings; and it was worthy of remark that, with one notable exception, they showed very little white in their plumage.—HENRY SHARP (Southend-on-Sea).

Effect of Thunder on Pheasants.—Referring to Mr. Rope's note on this subject (p. 78), a loud report seems to have the same effect on Peacocks as on Pheasants. On the afternoon of March 7th, as I was walking through Kensington Gardens, there was a sound of firing in the distance; each report was answered by the shouts of the Peacocks. I have on previous occasions noticed that a similar result is produced by the sound of fog signals.—A. HOLTE MACPHERSON (51, Gloucester Terrace, Hyde Park).

Ross's Gull.—On June 1st, 1888, lat. 78° 47′ N., long. 3° 6′ E., we were steaming north through ice. At the mast head all the forenoon, and while there, a Ross's Gull passed close to the ship, accompanied by a Snowbird. The Gull had a pink breast and belly. The wings were also pink underneath. It had the appearance of a Hawk coming towards us, and when going away looked like a Tern. It was the only bird of this species I had seen during forty-eight voyages to the Greenland seas.—DAVID GRAY (Peterhead).

Hen and Marsh Harrier in Sussex.—Mr. Bristow, of this town, has just afforded me an opportunity of seeing a specimen each of *Circus cyaneus* and *C. æruginosus*, shot in this neighbourhood and brought to him for preservation. The former was shot on Feb. 22nd, and weighed 19 oz.; the latter on March 3rd, and weighed 21 oz., both birds being immature females. The late Mr. A. E. Knox considered the Hen Harrier to be "by far the most generally distributed of the Harriers" in Sussex ('Ornithological Rambles in Sussex,' ed. i. p. 88). Mr. Borrer now accords this position to Montagu's Harrier ('Birds of Sussex,' p. 26, where, strangely enough, he wrongly imputes to Knox the same opinion). This author, in stating that "Montagu's Harrier" is most frequently met with, was comparing it with the Marsh Harrier, and not with the Hen Harrier, as may be seen (*op. cit.* p. 90). So also the information from the 'Ornithological Rambles' appearing in Mr. Borrer's work under the Hen Harrier, would appear to be intended by its author to apply to Montagu's Harrier. It will be remembered that Lord Lilford reported a specimen of the Hen Harrier from Sussex in March of last year (Zool. 1895, p. 189).—W. RUSKIN BUTTERFIELD (St. Leonard's).

Rookery destroyed by Crows.—We have in this village a small rookery of some thirty nests, nineteen of which are in a single sycamore in the Rectory garden. On March 30th, towards sunset, a pair of Crows attacked the sycamore, and the next morning its inhabitants had vanished.

They seem to have "gone for" the Rooks' eggs, and Mr. O. V. Aplin and I found fragments of shells under the tree when we visited it two or three days later. They hung about the village for several days, and have only at last been driven away by unsuccessful attempts to shoot them. Before they left us these rascally pirates had completed their work by ransacking the nests that had escaped their first attack; and now we have not a single pair of Rooks left in our settlement. All the familiar cawing of a spring day is hushed; and the same fate will doubtless overtake other rookeries if the brigands long escape the gun. Why could not the Rooks combine to defend themselves?—W. Warde Fowler (Kingham, Chipping Norton).

The Southward Flight of a Crane in Autumn.—In the recently published work by Rudolf Slatin Pasha, Colonel in the Egyptian Army, entitled 'Fire and Sword in the Sudan: a Personal Narrative of fighting and serving the Dervishes, 1879–1895,' translated by Major F. R. Wingate, C.B., Director of Military Intelligence, Egyptian Army, the following curious story is told (pp. 497–498), concerning the capture of a Crane in the Sudan which had been liberated with a message attached to it in a cartridge-case from Ascania Nova, Taurida, in Southern Russia. The incident suggests the route taken by these birds when quitting the South of Europe for their winter quarters in Africa. Slatin Pasha thus relates it:—"One day, in the month of December, 1892, when I had just left the Khalifa's door to take a short rest, one of the Mulazemin summoned me to the Khalifa's presence. I found him in the reception-room, surrounded by his Kadis, and the threats and reprimands which I had received on the occasion of Taib Haj Ali's calumny were still fresh in my mind. I was therefore considerably dismayed when the Khalifa, without returning my salute, ordered me to take my seat among the judges. 'Take this thing,' said he, after a short pause, and in a very severe tone, 'and see what it contains.' I at once arose and took in both hands the object he gave me, and then sat down again. It consisted of a brass ring of about four centimetres in diameter, attached to which was a small metal case about the size and shape of a revolver-cartridge. An attempt had been made to open it, and I could plainly see that it contained a paper. This was indeed an anxious moment for me. Could it be a letter from my relations, or from the Egyptian Government; and had the messenger who brought it been captured? Whilst I was engaged in opening the case with the knife that had been given to me, I turned over in my mind how I should act and what I should say; and, as good luck would have it, I had not on this occasion to have recourse to dissimulation. Pulling out two small papers and opening them, I found inscribed on them, in minute but legible handwriting, in German, French, English, and Russian languages, the following:—

'This Crane has been bred and brought up on my estate at Ascania Nova, in the Province of Taurida, in South Russia. Whoever catches or kills this bird is requested to communicate with me and inform me where it occurred.—(Signed) F. R. Falz Fein; September, 1892.'

"I now raised my head, which hitherto I had kept closely bent down, and the Khalifa asked, 'Well, what do the papers contain?' 'Sire,' I replied, 'this case must have been fastened to the neck of a bird which has been killed. Its owner, who lives in Europe, has requested that anyone who finds the bird should let him know where it was caught or killed.' 'You have spoken the truth,' said the Khalifa, in a somewhat more amiable tone; 'the bird was killed by a Shaigi near Dongola, and the cartridge-case was found attached to its neck. He took it to the Emir Yunes, whose secretary was unable to decipher the writing of the Christian, and he therefore forwarded it to me. Tell me now what is written on the paper.' I translated the message word for word, and at the Khalifa's command also tried to describe the geographical position of the country from which the bird had come, and the distance it had travelled before it was killed. 'This is one of the many devilries of these unbelievers,' he said at last, 'who waste their time in such useless nonsense. A Mohammedan would never have attempted to do such a thing.' He then ordered me to hand over the case to his secretary, and signed me to withdraw; but I managed to take one more hurried glance at the paper,—'Ascania Nova, Taurida, South Russia,' I repeated over and over again, to imprint it on my memory. The Mulazemin at the door anxiously awaited my return; and when I came out from the presence of my tyrannical master with a placid countenance they seemed greatly pleased. On my way to my house I continued to repeat to myself the name of the writer and his residence, and determined that, should Providence ever grant me my freedom, I should not fail to let him know what had happened to his bird." This story found its way into print last autumn through the Cairo correspondent of 'The Times,' whose very brief narration of it was quoted in 'The Zoologist' for October last (p. 382). A comparison of his version with that now given reveals certain discrepancies; but we may take it that the authorized version is that which appears in the volume now before us, and which has been translated by Major Wingate from the original notes of Slatin Pasha himself.

BATRACHIA.

Acclimatisation of Rana esculenta in Yorkshire.—On March 11th I received seventeen specimens of the continental Edible Frog. Twenty-five had originally been forwarded to me, but three died on the way, and five had disappeared, owing possibly to the attentions of the Custom-House officers. I have turned them into a certain suitable pond, and trust that they will increase and multiply. A few years ago I brought eight or nine of them over from Germany with me, and let them loose in a large walled-in garden. For four years they turned up regularly every spring; but after that I saw them no more, so in all probability they were gathered to their fathers. They never spawned while I had them, owing I presume to the fact that there was no water for them, and I never knew for certain where they took up their winter quarters; but I had strong suspicions that a large heap of manure afforded them the warmth and shelter they required. I also turned down at the same time about half-a-dozen green Tree Frogs, *Hyla arborea*, and they lived for two years to my knowledge, generally frequenting in the summer a tall thick privet-hedge. I have never found *Rana esculenta* wild in the British Isles. It is a fine handsome frog, and I do not think any objection can be raised to its attempted introduction, as might well be the case with other more injurious species. It can certainly make itself heard, but unless sufficiently close to a house to disturb the repose of the inmates, its croaking, to my mind, is an additional charm to the various sounds to be heard on a warm summer's evening.—OXLEY GRABHAM (Flaxton, York).

Newts in Denbighshire.—On April 5th, during a short holiday spent in Denbighshire, Mr. T. A. Coward and I came across the Palmated Newt, *Lophinus palmatus*, in a small pond in some slate-quarries on the moors near Nantglyn. In spite of a careful search, we found only one mature example, a male; but we captured several immature specimens 1⅛ in. in length, which still retained their tufted branchiæ. These were, presumably, individuals born late in the summer of 1895 which had been unable to complete their metamorphosis before the approach of winter. On the 6th we found the two commoner species (*Triton cristatus* and *Lophinus punctatus*) in a pond near Trefuant station.—CHARLES OLDHAM (Romiley).

Palmated Newt in Radnorshire and Breconshire.—During a few days' stay in the Elan Valley, near Rhayader, in April, I found the Palmated Newt frequenting various ponds and water-holes in that district.—J. STEELE ELLIOTT (Dixon's Green, Dudley).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 5th, 1896.—Mr. W. PERCY SLADEN, Vice-President, in the chair.

Mr. Ivor Richards was admitted, and Mr. S. H. Bickham was elected a Fellow of the Society.

On behalf of Capt. J. Marriott, Mr. Harting exhibited an antler of the Burmese Deer, *Cervus eldi*, and described a singular condition in another example which for eight years had continued to exude a blood-coloured liquid from a puncture on the under surface of the brow-tine. Prof. Stewart, to whom some of the substance had been submitted for examination, had found no blood-corpuscles therein, and considered it to be grease in a semi-fluid condition, the nature of the colouring-matter being as yet undetermined. Mr. Druce thought the substance exuded might be the excretion of the larvæ of some insect feeding upon the internal surface of the horn, and suggested the examination of a section, if possible.

Mr. Harting exhibited a drawing from life of a Klipspringer Antelope, *Oreotragus saltator*, lately received (for the first time in this country) at the Zoological Society's Gardens. He directed attention to the singular position of the hoofs and the enlarged condition of the fetlocks, suggestive of injury during capture. It was difficult to believe (as alleged) that this was the normal condition of the animal, so very dissimilar to that of other species allied to it.

Mr. Thomas Christy exhibited several cases of Butterflies collected by Mr. Horace Billington in Old Calabar, on which remarks were made by Messrs. W. F. Kirby and H. Druce.

Mr. B. D. Jackson, in directing attention to an English translation by Mr. J. Lucas of that portion of Pehr Kalm's 'Travels' which relates to England, remarked that few persons were aware that Kalm, a pupil of Linnæus, had in 1748 spent six months in this country and had diligently noted the plants which he met with. Thus he had recorded no less than sixty plants for Hertfordshire alone, deriving some of his information from an examination of the contents of two haystacks in that county,—in this way anticipating by more than a century one of the methods employed by Sir John Lawes and Sir J. H. Gilbert, and by Prof. Fream.

On behalf of Prof. Gustav Gilson, of Louvain, two papers entitled "Studies in Insect Morphology" were communicated by Prof. Howes. In the first of these—"On Segmentally Disposed Thoracic Glands in the larvæ of *Trichoptera*"—the author found that in *Limnophilus flavicornis* the prothoracic prominence gives exit to an underlying tubular gland. In *Phryganea grandis* each thoracic sternum gives exit to a glandular apparatus of the same category, the prothorax alone developing a prominence. Passing on to a consideration of the glands themselves, it was shown that in *Phryganea* they are slightly monilated branching tubes of a paired nature, which unite in the middle line. They are found to bear a cuticular lining, and to secrete an "oily" fluid which Dr. Hanseval had found, on analysis, to be identical with the secretion of the maxillary glands of *Cossus*. The author gave reasons for regarding these glands as inherited structures, preserved under the tubiculous habit, and not as organs newly acquired in correlation with that. In discussing the homology of the glands, he instituted comparisons with the "Bauchdrüse" of certain non-tubiculous caterpillars and the "salivary glands" of *Peripatus;* and concluded that they are nephridial rather than coxal, pointing out that by their discovery representatives of segmentally disposed glandular organs may be said to occur throughout the length of the Hexapodan body. In the discussion which followed, Mr. A. R. Hammond referred to the saccular reservoir on the ventral surface of the prothorax of the larva of the Puss Moth, *Cerura vinula*, from which an acid fluid is said to be ejected; also to the large pear-shaped glandular cells which underlie the integument of the thoracic segments in the larva of *Dicranota bimaculata*, as described by Prof. Miall (Trans. Entom. Soc. 1893, p. 235). The function of these cells appeared to be the secretion of an oily fluid.

In the second paper by Prof. Gilson and M. J. Sadones—"On the Larval Gills of *Odonata*"—the authors described in each branchial lamella of *Libellula depressa* three conical processes which are functional in preventing adherence of the lamella to its fellows, and in maintaining full exposure to the surrounding medium. The authors showed that the tracheal ramifications are looped tubules running parallel with the surface of the gill, which at all points lie embedded in a subcuticular protoplasmic syncytium. Stress was laid upon the fact that the in- and out-going tracheal tubules are related to one and the same branchial main tracheal trunk, and that the air within the gill does not circulate regularly through the tracheal system. Turning to physiological considerations, it was pointed out that gaseous interchange between the contents of the gill-laminæ and the surrounding medium must of necessity take place through the living protoplasm of the lamellar syncytium; and, on consideration of the fact that the death of an epithelium is known to profoundly alter the osmotic properties of the tissue which it composes, the conclusion was drawn that absorption of oxygen must here involve something more than a mere physical process. Attention was then directed to the existence of a "præ-rectal vesicle" from which there depend into the lumen of the guts a couple of epitheloid disks. It was suggested that this structure, together with a similarly differentiated epithelium lying about the bases of the gills, might be possibly concerned in the removal of carbonic anhydride. The authors accordingly discriminated between the air-vascular (tracheal) system, as concerned in the absorption and dissemination of oxygen, and the blood-vascular as concerned in nutrition and the removal of waste. In the discussion which followed, Mr. A. R. Hammond expressed his satisfaction at finding that the authors' observations on the gills of *Odonata* confirmed to some extent his own views as to the syncytial condition of the hypodermis in aquatic larvæ. In the larvæ of the red-blooded species of *Chironomus* this condition appeared to be most strikingly exemplified.

March 19*th*.—Mr. C. B. Clarke, F.R.S., President, in the chair.

Messrs. James Backhouse and Spencer H. Bickham were admitted, and Messrs. J. H. Leigh and Edward Step were elected Fellows of the Society.

Mr. Thomas Christy drew attention to the fact that the Anniversary

Meeting of the Society would fall this year on Whit-Monday. The President, in reply, remarked that the matter had not escaped the attention of the Officers, and stated what was proposed to be done.

Mr. Clement Reid exhibited fruits of *Naias marina* from a peaty deposit below mean-tide level in the new Docks at Barry, S. Wales. In Britain it had only been found living at a single locality in Norfolk, but in a fossil condition it had been obtained in the pre-glacial forest-bed at Cromer. A discussion followed in which Messrs. A. B. Rendle, H. Groves, and A. W. Bennett took part, and it was suggested that the living plant might be looked for in South Wales, where, being inconspicuous, it might have been hitherto overlooked.

Mr. Clement Reid also exhibited some wood forwarded by Mr. H. N. Ridley from the jungle near Singapore. It appeared to have been eaten into a honeycombed mass of peculiar character, and was found only in wet places, but always above ground, the entire tree rotting. Neither Mr. Ridley nor Mr. Reid had seen anything like it in England; and the latter, while suggesting that the small lenticular unconnected cavities in the wood were probably caused by insects or their larvæ, thought they were unlike the work of either Beetles or White Ants. Some critical remarks were offered by Dr. Haviland.

A paper was read by Dr. Otto Stapf "On the Structure of the Female Flowers and Fruit of *Sararanga*, Hemsley." The materials utilized consisted of female flowers and fruits of *Sararanga sinuosa*, Hemsley (Journ. Linn. Soc. vol. xxx. p. 216, t. 11), which had been collected by the officers of H.M.S. 'Penang' in New Georgia, Solomon Islands, and were in excellent preservation. There were also photographs and a description, taken upon the spot, of the tree, about 60 ft. high, shortly branched at the top, with terminal, nodding, white-flowered, very compound, and gigantic panicles, the leaves being like those of an ordinary screw-pine. On this paper some critical remarks were offered by Mr. Rendle.

On behalf of Mr. G. S. West, a paper was read by Prof. Howes on two little-known Opisthoglyphous Snakes. The author had examined and compared, in respect of the structure of the buccal glands and teeth, specimens of the grooved and the non-grooved varieties of *Erythrolamprus æsculapii*, as recorded by Dr. Günther (Biologia Centr.-Amer. part cxxi. p. 166), and he proved that the latter were rightly referred to the species.

April 2nd.—Mr. J. G. Baker, F.R.S., Vice-President, in the chair.

Mr. J. W. Cornwall was elected a Fellow of the Society.

On behalf of Dr. F. Arnold, of Munich, the Secretary exhibited several photographs of typical Lichens, received in continuation of a series which has been for some time past in course of issue by that well-known lichenologist.

Mr. M. F. Woodward exhibited a very young example of the Spiny Ant-eater, *Echidna aculeata*, taken from the mammary pouch of the parent at Newcastle, Western Australia, by Mr. H. B. Woodward, Curator of the Perth Museum. It was intermediate in size between the two stages described by Prof. Parker, but showed no trace of the calcaneal spur characteristic of the male, nor any trace of the mammary pouch peculiar to the female. He called attention to the flattened and beak-like character of the snout, and the vestiges of the "egg-breaker," and to the disposition of the spine papillæ. For the purpose of comparison, Mr. Woodward exhibited also the heads of *Ornithorhynchus* and *Echidna*, and a male and female mammary fœtus of *Perameles*.

A paper was read by Mr. C. H. Wright, "On the genus *Stemona*, Lour.," one of the few monocotyledonous genera whose flowers are constructed on a tetramerous type, and remarkable for the diversity of its vegetative characters, while its floral structure varies within comparatively narrow limits. In habit the plants of this genus are generally climbers, but *S. sessilifolia*, Miq., and *S. erecta*, C. H. Wright, are exceptions. Of the twelve species enumerated by Mr. Wright as concentrated in Eastern Asia, two of them extend to North Australia.

Lieut.-Col. C. T. Bingham, in a paper on some Exotic Fossorial Hymenoptera in the British Museum (communicated on his behalf by Mr. W. F. Kirby), enumerated thirty-four species, of which no fewer than thirty were previously undescribed. The discovery of many of them was due to the researches of the author, who had spent twelve years collecting in Sikhim, Burma, and Tenasserim. In the arrangement of the *Pompilidæ*, a confessedly difficult group of Fossorea, he had adopted the classification proposed by Prof. Kohl of Vienna, but he was of opinion that a thoroughly satisfactory classification had yet to be devised. A new genus, *Paragenia*, was proposed for an insect, described originally from Borneo, which he had found also in Burma and Tenasserim, possessing the characters of both *Agenia* and *Macromeris*, resembling the former in neuration and in habits, and the latter in the conspicuous development of the coxæ and femora, especially in the male.

The President then gave a descriptive account of the Khasia Hills from personal experience, dwelling on their geological formation, the extraordinary rainfall of the district (120 inches in five days), and the chief characteristic features of the flora and fauna. His remarks were illustrated by a number of lantern-slides, several of which had been prepared from photographs taken by himself, and others from sketches made by Sir Joseph Hooker. Some additional remarks were made by Col. Sir Henry Collett, K.C.B., from experience gained during two years' residence while commanding the British forces in that part of India.

Zoological Society of London.

March 3rd, 1896.—Sir W. H. Flower, K.C.B., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February, 1896, and called special attention to a young Klipspringer Antelope, *Oreotragus saltator*, presented by Commander Alfred Paget, R.N.

Mr. G. E. H. Barrett-Hamilton exhibited two skeletons and other bones of the Lemming, *Myodes lemmus*, obtained by Dr. H. Gadow from caves in South Portugal, a discovery which increased our knowledge of its distribution in past times. At present the Norway Lemming is only to be found in Norway and Lapland, its southern range extending to about 58½° N. lat.; but its remains have been met with in England, and at Quedlinburg, in Saxony. Mr. Hamilton's remarks were supplemented by Dr. Gadow, who gave an account of the caves in Southern Portugal, in which he had found these Lemmings' bones along with those of other animals.

Mr. Sclater opened a discussion on the Rules of Zoological Nomenclature by reading a paper on the Divergences between the Rules for naming Animals of the German Zoological Society and the Stricklandian Code usually followed by British naturalists. After giving some details of the plan proposed by the German Zoological Society for a new work on the Animal Kingdom to be called 'Das Tierreich,' and to contain an account of all the species of recent animals hitherto described (estimated to be at least 386,000 in number), Mr. Sclater shortly recapitulated the Rules which were intended to be used in the preparation of this important work. The main divergences from the Stricklandian Code were pointed out to be three in number:—(1) The permission to use the same generic names in zoology and botany; (2) the use of "tautonyms," that is, the same generic and specific name for a species in certain cases; and (3) the adoption of the tenth edition of the 'Systema Naturæ' instead of the twelfth as the commencement of binary nomenclature. The advantages of, and objections to, these alterations of the Stricklandian Code were discussed, and other minor points of nomenclature were touched upon, amongst which was the use of trinomials, which Mr. Sclater approved of as designations for subspecies. A communication was read from Graf Hans von Berlepsch, expressing his regret at not being present on this occasion, and giving his opinion on the three points specially discussed. After some remarks by the Chairman, Mr. E. Hartert spoke in defence of the German Rules, and was followed by Prof. Lankester, Mr. H. J. Elwes, Dr. Sharp, Mr. Blanford, Mr. H. O. Forbes, and Mr. Kirby.

A communication was read from Graf Hans v. Berlepsch and M. J. Stolzmann on the ornithological researches of M. J. Kalinowski in Central

Peru. The collections made in the years 1890–93 had been transmitted to the Branicky Museum of Warsaw, and contained examples of 295 species and subspecies, of which an account was given in the present paper. Five species and twenty-two subspecies were described as new.

Dr. David Sharp, on behalf of the Committee for investigating the flora and fauna of the West India Islands, communicated a paper on West Indian terrestrial Isopod Crustaceans prepared by M. Adrien Dollfus.

March 17th.—Prof. G. B. Howes, F.L.S., F.Z.S., in the chair.

Mr. Sclater called the attention of the meeting to the prospectus of the great work of the German Zoological Society, to be called 'Das Tierreich,' spoken of at the last meeting, and gave some particulars as to the mode in which the plan was intended to be carried out. He also called attention to the appointment of a Committee on Zoological Nomenclature at the International Zoological Congress held at Leyden last year.

A communication was read from Lieut.-Col. C. T. Bingham, containing a contribution to the knowledge of the hymenopterous fauna of Ceylon. The paper was founded mainly on the collections made in that island by Col. Yerbury, R.A., and Mr. E. E. Green, and dealt only with the Monotrochous Hymenoptera, of which 335 species were recorded. Of these seven were now described as new. The author observed that this number was far less than what must actually occur in an island with so varied a climate and flora. Most of the species, as was to be expected, likewise occurred in India.

A communication was read from Mr. Edward T. Browne on British Hydroids and Medusæ. This paper contained descriptions of the early stages, and notes on twenty species of Medusæ, of which examples had been collected at Plymouth, and in Valencia Harbour on the west coast of Ireland. It also contained a revision of the synonyms of the species and an account of their distribution. Notes on the hydroids connected with some of the species were added.

Mr. A. Smith Woodward read a paper on some extinct fishes of the Teleostean family *Gonorhynchidæ*. He described a new specimen of *Notogoneus osculus* from the Eocene (Green River Shales) of Wyoming, U.S.A., confirming Cope's determination of this fish as a member of the family *Gonorhynchidæ*. He also pointed out that the so-called *Sphenolepis squamosseus* and *S. cuvieri*, imperfectly described by Agassiz from the Eocene of France, are generally identical with *Notogoneus*. In proof of this identification, he gave an account of new specimens in the British Museum. The *Gonorhynchidæ* were thus shown to have comprised freshwater fishes in the early Tertiary period both in Europe and North America.—P. L. Sclater, *Secretary*.

Entomological Society of London.

March 4th.—W. F. H. Blandford, M.A., F.Z.S., V.P., in the chair.

Mr. P. Marshall, of Canterbury College, Lincoln, N.Z., was elected a Fellow.

Mr. P. H. Grimshaw exhibited specimens of *Cephenomyia rufibarbis*, Meigen, a new British Bot-fly parasitic on the Red Deer in Scotland.

Mr. C. G. Barrett exhibited, for Mr. Porritt, a black variety of *Polia flavicincta*, taken at sugar in his garden at Huddersfield; a variety of *Cosmia trapezina* with a blue-black central band; and a variety of *Mania typica* with pinkish white central markings, bred by Mr. Turnstall, of Huddersfield.

Mr. A. H. Jones exhibited specimens of the following butterflies, captured at Coomassie by Major Henry P. Northcott during the recent expedition, viz. *Papilio zenobia*, *Elymnias bammakoo*, *Limnas alcippus*, *Romaleosoma gausape* (var.), *Catuna cœnobita*, *Terias sengalensis*, and *Neptis nemetes*.

Sir John T. D. Llewelyn, Bart., M.P., exhibited specimens of a small species of Diptera which he believed to be parasitic on *Trochilium sphegiforme*, as he had bred a number from that species. *T. sphegiforme*, although one of the most local moths in this country, had occurred last year at Dolau Cothy, Carmarthenshire, in such numbers in the larval state as almost to destroy the whole of the alders growing there. Mr. G. H. Verrall said that the insects belonged to a species of *Phora*, possibly *Phora rufipes*, practically omnivorous, but not considered to be truly parasitic.

Mr. Hampson exhibited an exotic species of Locust which Lord Walsingham had found in his conservatory at Merton Hall, Norfolk, where no exotic plants had been imported for some years.

Dr. Sharp exhibited specimens of the pupæ of *Micropteryx* (probably *semipurpurella*), and drawings to illustrate their structure. Mr. McLachlan said that so long ago as 1865 he had suggested the close affinity of *Micropteryx* to the Trichoptera; the opinion then formed had since been much strengthened, but he was not disposed to admit co-ordinal relationship.

Mr. McLachlan exhibited a singular instance of monstrosity in a Dragon-fly. The insect was a male of *Hetærina occisa*, Hag., from Venezuela. On the left side were three wings, two mesothoracic and the other metathoracic; on the right side only one wing, the metathoracic. The supplementary wing on the left side was inserted almost immediately beneath the ordinary wing; it was normal in form and neuration, but the red pigment at the base (fully developed in all the other wings) was not evident, the wing in this respect being similar to those of highly immature examples of the same species.

Mr. E. E. Green exhibited a larva of an homopterous insect—one of the

Cicadinæ—from Ceylon, having what appeared to be a head at its caudal extremity. He pointed out that the larva had caudal appendages which might be mistaken for hairy antennæ, and pigment spots resembling eyes on the antepenultimate segment of the body. The insect walked either backwards or forwards, and when first seen looked like a beetle of some kind, the caudal extremity representing the head.

Mons. Louis Péringuey contributed a paper entitled "Descriptions of New Species of South African Coleoptera, chiefly from Zambesia."

Dr. Sharp read a paper, by Professor Williston, "On the Diptera of St. Vincent, West Indies. Part I."

March 18*th*.—Prof. RAPHAEL MELDOLA, F.R.S., President, in the chair.

Mr. T. A. Gerald Strickland was elected a Fellow.

Mr. C. G. Barrett exhibited drawings of varieties of British Lepidoptera in the collection of Mr. S. J. Capper, of Huyton Park, Liverpool. They comprised 389 figures, representing 139 species, of which 33 were butterflies and 50 moths. Herr Jacoby enquired whether any record had been kept of the localities in which these varieties had been caught, or of the conditions under which they had been bred. Mr. Barrett in reply stated that none of the varieties exhibited had been obtained by breeding under artificial conditions for the purposes of experiment, but they were all natural varieties.

Mr. J. J. Walker, R.N., exhibited a specimen of *Procas armillatus*, taken on Durland Hill, near Chatham.

Herr Jacoby exhibited a specimen of *Loxoprosopus ceramboides*, Guér., from Brazil.

Mr. E. E. Green exhibited the eggs of some species of *Locustidæ* extracted from the stem of a young cinchona tree at Punduloya, Ceylon. The species of the parent insect was undetermined; it was possibly either a *Cymatomera* or a *Cyrtophyllus*, both of which possess large sabre-shaped ovipositors. A slit half inch deep and more than two inches long had been cut into the hard wood, in which the eggs had been symmetrically deposited, edge to edge, with the coloured part inwards. The greater part of each egg was of fine texture and coloured green; but at the extremity from which the young insect would make its exit the egg shell was soft, pliant, and beautifully reticulated. The row of flattened green eggs lying side by side resemble an acacia leaf, but as they are concealed within the stem the resemblance was apparently without motive. It seemed curious that as the eggs were embedded they should be brightly coloured.

Mr. Green read a short paper entitled "Notes on *Dyscritina longisetosa*, Westw." He remarked that drawings of the species had been exhibited by him at a recent meeting of the Society. Dr. Sharp could not agree with Mr. Green in regarding it as belonging to the *Forficulidæ*. He thought further specimens for examination were required before attempting to determine its position, which was at present doubtful.

Mr. W. F. H. Blandford communicated a paper entitled "Descriptions of New Oriental *Scolytidæ*."

April 1*st*.—Prof. Meldola, F.R.S., President, in the chair.

Mr. Luke Bishop and Mr. Robert Nesham were elected Fellows of the Society.

Mr. Champion exhibited, on behalf of Mr. Blatch, specimens of *Quedius riparius*, Kellner, captured in February last on the banks of running streams at Porlock, Somerset. The insect was an interesting and unexpected addition to the British list, and the second recent novelty from the west country, the other being *Ochthebius lejolisi*, Muls. and Rey, found at Ilfracombe in June last by Mr. Bennett. Mr. Waterhouse had seen specimens of the *Quedius* from Wales and Scotland.

Mr. Champion also exhibited a small collection of Coleoptera made by Mr. O. V. Aplin in Southern Tunis during various expeditions inland from Gabes. The collection included some interesting *Tenebrionidæ* of the genera *Pimelia* and *Adesmia*. Mr. Aplin noticed specimens of these insects impaled by Shrikes. Dr. Sharp, Mr. R. Trimen, and Mr. McLachlan made some remarks on the subject of the impalement of insects by birds.

Mr. Goss exhibited, for Mr. Cameron, an apterous male of *Mutilla contracta*, taken by Mr. Rothney at Barrackpore, India. The specimen was stated to be the first recorded instance in this species of a wingless male, and was also abnormal in having the thorax incised laterally.

Dr. Sharp called attention to the fact that at a recent meeting of the Society (March 20th, 1895, see Proc. 1895, p. x) a specimen of a supposed dimorphic form of one of the species of *Dytiscus* was examined, and Prof. Stewart enquired whether any anatomical examination had been made of the sexual organs. Dr. Sharp said that in 'Comptes Rendus Soc. Bordeaux,' 1894, there was an account of the examination of the sexual organs of the supposed second form of *D. marginalis* by M. Peytoureau, who came to the conclusion that it was really a distinct species, which he called *D. herberti*.

Prof. Poulton exhibited examples of the type labels now in use in the Hope Collection at Oxford, and illustrated their employment by projecting on the screen, by the lantern, a photograph of the Westwood types of African *Eusemiæ*, described in Oates' 'Matabele Land' (Lond., 1881). He said that such labels, having been once set up in type, could be reproduced in electrotype very cheaply and efficiently. Black ink was considered better than red on account of its greater permanence. Mr. Verrall was of opinion that no species should be described from a single type, but from many specimens, and he wished every so-called "type" could be destroyed as soon as a species had been described from it. He knew of cases in which a "species" had been described from a single female specimen in bad condition. Mr. Blandford explained the system of labelling types in the Brussels Museum. Dr. Sharp, Prof. Meldola, Mr. McLachlan, and Prof. Poulton continued the discussion.

Mr. Blandford exhibited a series of lantern-slides showing the uses to which photography could be put in entomological illustration. The photographs shown included various *Saturniidæ*, *Vanessidæ*, species of *Mamestra*, *Tipula*, *Ophion*, *Carabus*, *Lucanus*, *Sitones*, &c., as well as one or two examples of insect-injury, and a view in Windsor Park showing oaks defoliated by *Tortrix viridana*.

Prof. Poulton read a paper "On the Courtship of certain European *Acriidida*," from observations made in exceedingly favourable weather at the end of August and beginning of September last. He was much indebted to Mr. F. J. H. Jenkinson, of Cambridge, and Mr. F. V. Dickens for many independent observations and valuable confirmation. The observations were almost all made in the neighbourhood of the Weisshorn Hotel, high above Vissoye, in the Val d'Anniviers. Dr. Sharp had been kind enough to name the species referred to in the paper.

Mr. G. F. Hampson read a paper "On the Classification of three Subfamilies of Moths of the Family *Pyralinæ*: the *Epipaschiinæ*, *Endotricinæ*, and *Pyralinæ*."—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

Hunting in Many Lands. The Book of the Boone and Crockett Club. Editors, THEODOTE ROOSEVELT, GEORGE BIRD GRINNELL. 8vo, pp. 448, with sixteen illustrations. New York: Forest and Stream Publishing Company. Agent for Great Britain: David Douglas, Edinburgh.

To the members of the Boone and Crockett Club is due the credit of having secured, by Act of the New York Legislature, the incorporation of the New York Zoological Society, as well as an Act to protect the Yellowstone National Park, and to punish crimes and offences within its area, where, it may be remembered, such wanton slaughter of Bison took place in March, 1894. When it is stated that this so-called "Park" includes nearly 5600 square miles, some idea may be formed of its importance as a game reserve. The Act of Congress referred to is printed in the present volume, and the descriptive account by Capt.

Anderson, which precedes it, is most interesting. A very curious, well nigh incredible, fact is mentioned with regard to the Bears, Grizzly and Black, in the Yellowstone National Park. It is said that the preservation of the game there has unexpectedly resulted in turning a great many Bears into scavengers for the hotels within the park limits. Their tameness and familiarity are astonishing, and they act more like hogs than beasts of prey. Accordingly naturalists have now a chance of studying their character from an entirely new standpoint, and under entirely new conditions. Never before has such an opportunity presented itself.

With regard to the other chapters in this book, it may be remembered that in 1893 the same editors issued a volume on Big Game Hunting in America. Their second volume, now before us, deals with the pursuit of Big Game in many parts of the world beyond the American Continent, including Russia, Mongolia, Thibet, India, and East Africa. A chapter on Wolf-hunting in Russia, by Lieut. H. T. Allen, of Washington, with a portrait of the "Barzoi," or Wolf-hound, employed in that country, is particularly interesting.

In another chapter Col. Roger D. Williams, of Lexington, Ky., describes Wolf-coursing in Montana and Wyoming (where the Wolves are stronger and fiercer than those found further south) as one of the most thrilling and exciting sports to be enjoyed.

These pages, although primarily more attractive to sportsmen than to naturalists, are not without interest to the latter, by reason of the measurements and weights which are given of the wild animals described. Thus, in the chapter by Col. Roger Williams just mentioned, we are told that the American Wolf, while not so tall or leggy as the European Wolf, is more compact, with heavier head, coarser muzzle, and smaller ears, and perhaps a little heavier in weight, standing from 29 to 36 inches at the shoulder, and weighing from 85 to 125 lbs. Col. Williams adds that the American Wolf is, when run down to a death finish, a much more formidable foe for dogs than his European relative; and he arrived at this conclusion, he says, after hunting with high-priced hounds that had won medals in Russia for Wolf-killing, but which demonstrated their utter inability even to hold American Wolves.

Perhaps the most valuable chapter in this volume is that entitled "Head Measurements of the Trophies at the Madison Square Garden Sportmen's Exhibition" (pp. 424–432). In this will be found some very useful statistics, compiled by three members of the Boone and Crockett Club (Messrs. Roosevelt, Grinnell, and Rogers), including tabulated measurements of Bison, Bighorn, Musk Ox, White Goat, Prongbuck, Wapiti, Mule Deer, White-tailed Deer, Moose, and Cariboo. These measurements are compared with those given in the English Catalogue of Trophies in the American Exhibition in London, 1887, and also with those in Ward's Book of Horn Measurements, 1892, a high compliment being paid to the English Committee who prepared the Catalogue of 1887, and who may be said to have laid the foundation for a collection of reliable and trustworthy statistics relating to the Big Game of America, as interesting to sportsmen as it is useful to zoologists.

This volume then is not to be regarded as embodying merely a sensational account of the doings of American sportsmen, for while many of the chapters are not devoid of thrilling adventure, they contain much useful information derived from the personal observation of experienced hunters.

A Naturalist in Mid Africa: a Journey to the Mountains of the Moon and Tanganyika. By G. F. SCOTT ELLIOTT, M.A., F.L.S. 8vo, pp. i—xvi, 1—413. With numerous illustrations and maps. London: Innes & Co. 1896.

WHEN the author of this interesting volume returned, rather more than a year ago, from his adventurous ascent of Mount Ruwenzori, and exploration of the country to the north of the Albert Edward Nyanza, he read papers at the Geographical, Linnean, and Zoological Societies, in which he gave a more or less abridged narrative of his travels, and some account of the flora and fauna of the country which he explored. In the interval which has since elapsed it would seem that he has been busily employed in the preparation of the volume now before us, which embodies a full and complete account of his arduous journey, and of the scientific results attained, so far at least as the materials collected by him have been worked out (*cf.* Appendix, p. 387).

His expedition seems to have been planned chiefly with the object of determining the question of botanical areas around the shores of the Victoria Nyanza, Lake Tanganyka, and other parts of Equatorial Africa. Starting from Mombasa, he journeyed north-west to the head of the Victoria Nyanza, passing along the northern shore of that lake, and round its north-west end to Kitangule, then across the north-eastern extremity of the Albert Edward Nyanza to Mt. Ruwenzori, which lies between that lake and the more northern Albert Nyanza. After completing the exploration of that mountain, he turned southward to the head of Lake Tanganyka, and proceeding then by water, traversed the entire length of that lake and Lake Nyassa, when, crossing the Shiré highlands and the Zambesi valley, he found himself once more at the sea at Chindi, some 1300 miles south of Mombasa. As the zoological results of this expedition have been already briefly made known to our readers (Zool. 1895, pp. 154, 238), we need not do more than call attention to the publication of the present volume, in which more detailed information may now be found.

It may be observed that both the Sunbirds mentioned at pp. 98, 99, were originally described from Kilmanjaro; and *Nectarinia johnstoni* was found by Mr. Gregory on Mount Kenia (*cf.* 'Ibis,' 1896, p. 290).

We learn from the Appendix (p. 387) that the collection of mammals obtained by the author has been entrusted for determination to Mr. Oldfield Thomas, of the Natural History Museum, and it is not unlikely that some of them may prove to be new and undescribed.

Dr. Günther has already described several new Reptiles and Batrachians collected on this expedition (Ann. Mag. Nat. Hist. June, 1895), and in a list of more than one hundred different species of insects enumerated by Dr. A. G. Butler (Proc. Zool. Soc. 1895) about a dozen are stated to be new.

It is to botanical science, however, that Mr. Scott Elliott, as on former explorations in Africa, has made the most valuable contributions, and his book, therefore, appeals more directly to botanists. Nevertheless zoologists will find in its pages a good deal of information illustrative of the fauna of a most interesting and still little-known region of Central Africa.